

REMARKS

This application has been carefully reviewed in light of the Office Action dated May 13, 2008. Claims 1-8 remain in this application. Claim 1 is the independent Claim. Claim 1 has been amended. It is believed that no new matter is involved in the amendments or arguments presented herein.

Reconsideration and entrance of the amendment in the application are respectfully requested.

Art-Based Rejections

Claims 1-4 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,776,894 (Watanabe); Claims 5-7 were rejected under 35 U.S.C. § 103(a) as obvious over Watanabe in view of U.S. Patent No. 4,926,230 (Yamagishi); Claims 6 and 8 were rejected as obvious over Watanabe in view of Japanese Patent Publication no. JP 59-35016 (Nakamura).

Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the clarifying amendments above and the arguments below.

The Watanabe Reference

Watanabe is directed to a first and second photovoltaic cell 3 and 4 each having a p-i-n structure to form a tandem p-i-n/p-i-n (or n-i-p/n-i-p) structure (*See, Watanabe; Col. 4, lines 17-34*). A back electrode 5 and n-type layer 43 are disposed on a i-type layer 41 of the second photovoltaic cell 4 (*See, Watanabe; Fig. 1*).

The Yamagishi Reference

Yamagishi is directed to a photovoltaic device of amorphous or microcrystalline semiconductor having a multijunction (*See Yamagishi; Abstract*).

The Nakamura Reference

Nakamura is directed to a hydrogen-containing silicon layer (*See Nakamura; Abstract*).

The Claims are Patentable Over the Cited References

The present application is generally directed to a silicon based thin film solar cell.

As defined by amended independent Claim 1, a silicon based thin film solar cell is provided. A conducted type silicon based low refractive index layer, a silicon based interface layer, and a back electrode are disposed in this order on a backside of a photoelectric conversion layer observed from a light incident side.

The applied references fail to disclose or suggest the above features of the claims of the present invention. In particular, the applied references fails to disclose or suggest "a conducted type silicon based low refractive index layer, a silicon based interface layer, and a back electrode are disposed in this order on a backside of a photoelectric conversion layer observed from a light incident side," as required by amended independent Claim 1 of the present invention.

Watanabe discloses a first and second photovoltaic cell 3 and 4 each having a p-i-n structure to form a tandem p-i-n/p-i-n (or n-i-p/n-i-p) structure (*See, Watanabe; Col. 4, lines 17-34*). A back electrode 5 and n-type layer 43 are disposed on a i-type layer 41 of the second photovoltaic cell 4 (*See, Watanabe; Fig. 1*).

In contrast, the present invention requires a conducted type silicon based low refractive index layer, a silicon based interface layer, and a back electrode are disposed in this order on a backside of a photoelectric conversion layer observed from a light incident side. This features provides a silicon based thin film solar cell that exhibits a sufficient light trapping effect to keep a series resistance of the solar cell small even if a layer having a low refractive index is disposed (*See, Specification; Page 7, lines 11-20*).

Furthermore, the interface layer improves a contact resistance between the low refractive index layer and a back electrode (*See, Specification; Page 12, lines 9-22*).

Thus, Watanabe does not disclose or suggest this feature of the present invention as required by amended independent Claim 1. The ancillary references do not remedy the deficiencies of Watanabe.

Since the applied reference fails to disclose, teach or suggest the above features recited in amended independent Claim 1, this reference cannot be said to anticipate or render obvious the invention which is the subject matter of that Claim.

Accordingly, amended independent Claim 1 is believed to be in condition for allowance and such allowance is respectfully requested.

The remaining claims depend either directly or indirectly from amended independent Claim 1 and recite additional features of the invention which are neither disclosed nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance and such allowance is respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310) 785-4721 to discuss the steps necessary for placing the application in condition for allowance.

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If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

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